

Diagram A shows three circles of radius  $1\mu\text{m}$  in contact with a horizontal surface. The circles are arranged in a row, touching each other and the surface. A vertical dimension line indicates the radius of each circle is  $1\mu\text{m}$ .

A cross-sectional diagram of a polymer film on a substrate. The substrate is a solid horizontal line at the bottom. Above it is a wavy line representing the interface. Below this wavy line, there are three dashed circles representing voids. To the left of the wavy line, there are two horizontal lines representing the film thickness, with a vertical double-headed arrow between them labeled  $0.01\mu\text{m}$ . To the right of the wavy line, there is a horizontal double-headed arrow between two vertical lines, labeled  $1\mu\text{m}$ , indicating the wavelength of the wavy interface.

A schematic diagram of a thin film on a substrate. The substrate is represented by a solid black horizontal line at the bottom. Above it is a layer of atoms, depicted as a grid of small circles. To the left of the atom layer, a vertical double-headed arrow indicates the thickness of the film, labeled as 20 nm.

Diagram illustrating the structure of a polymer membrane. The membrane consists of a thin polymer layer (thickness  $<1 \text{ nm}$ ) and a porous support layer. The porous support layer has a grid of circular pores with a diameter of  $20 \text{ nm}$ .

Fig. 1

Fig. 2

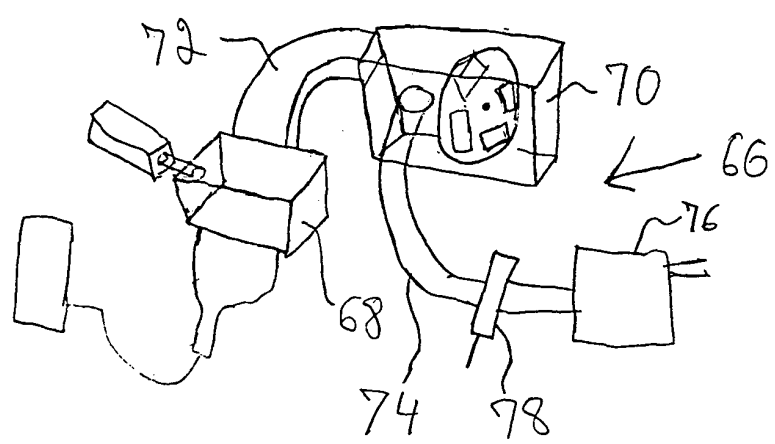
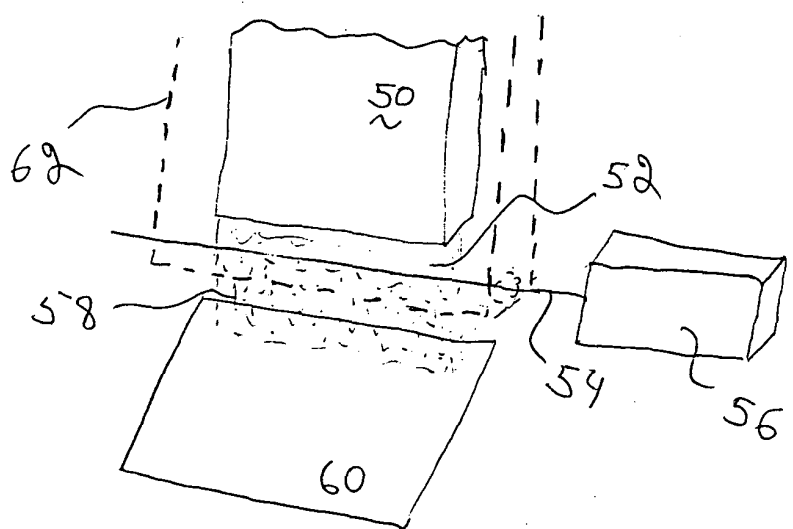


Fig. 3

Fig. 4

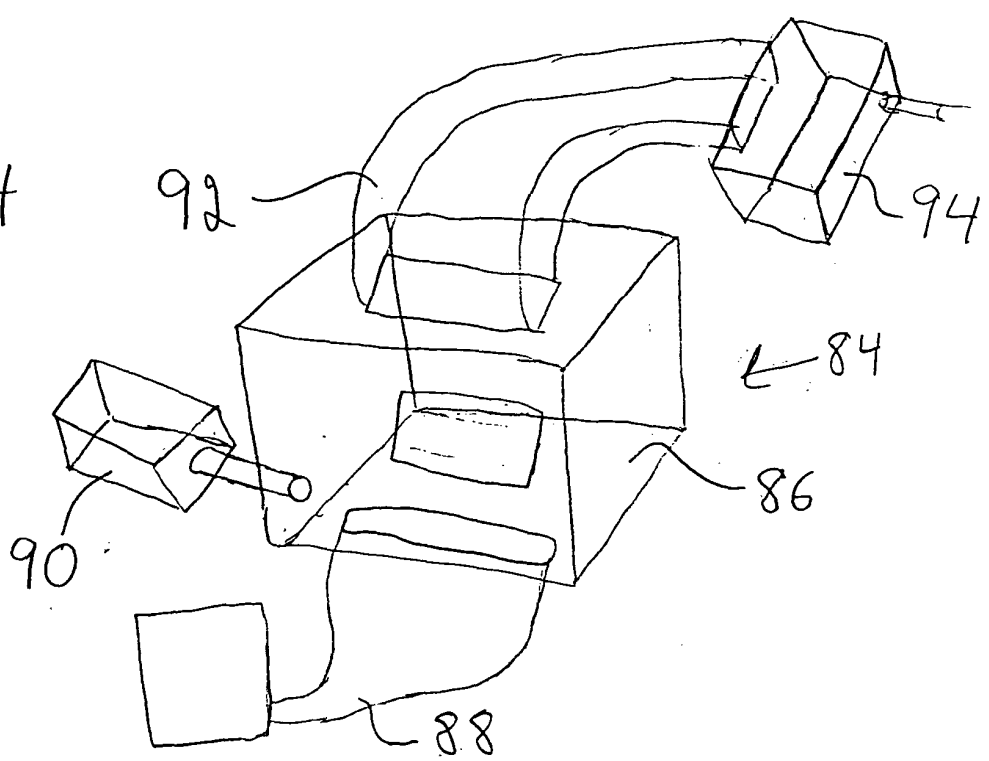
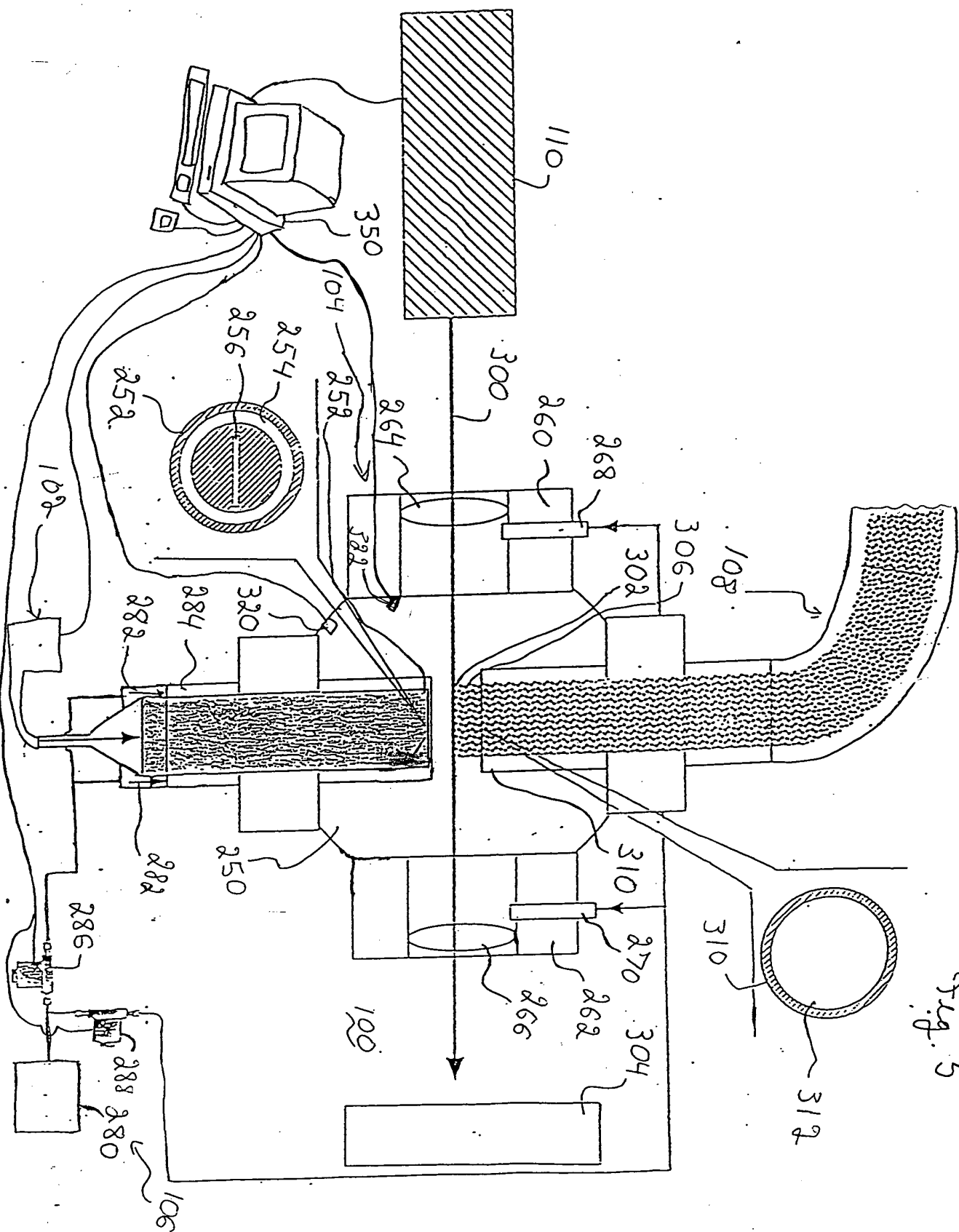


Fig. 5



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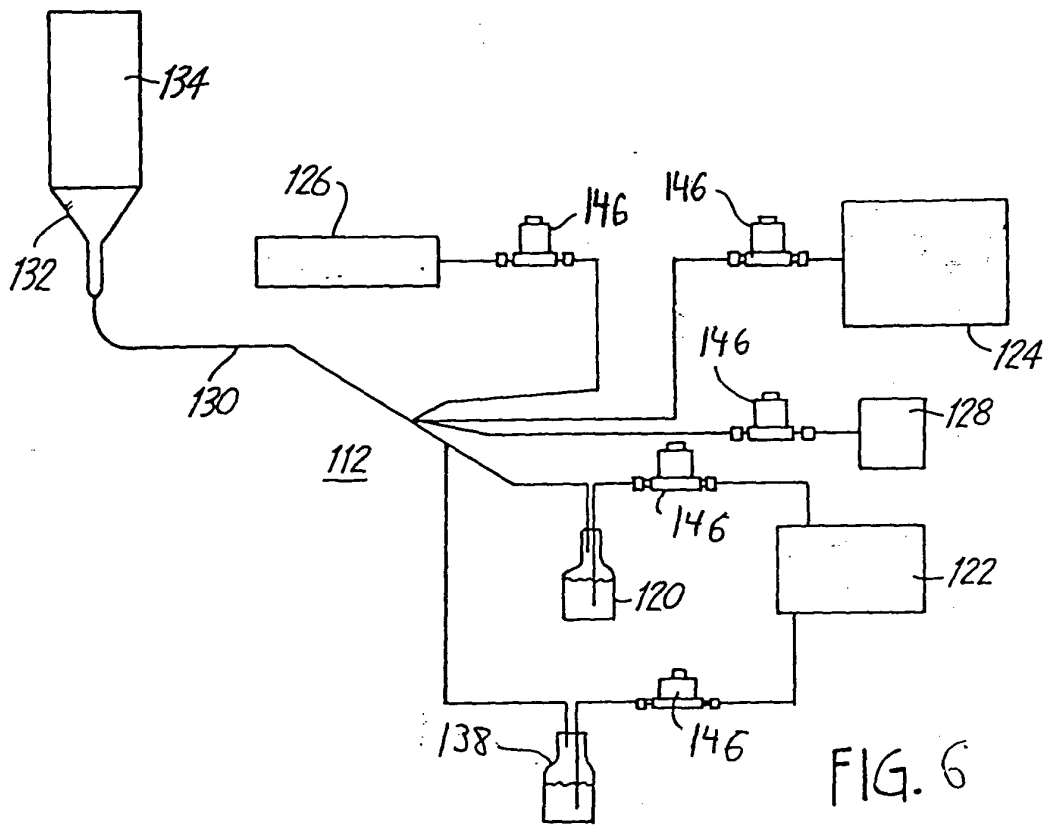


FIG. 6

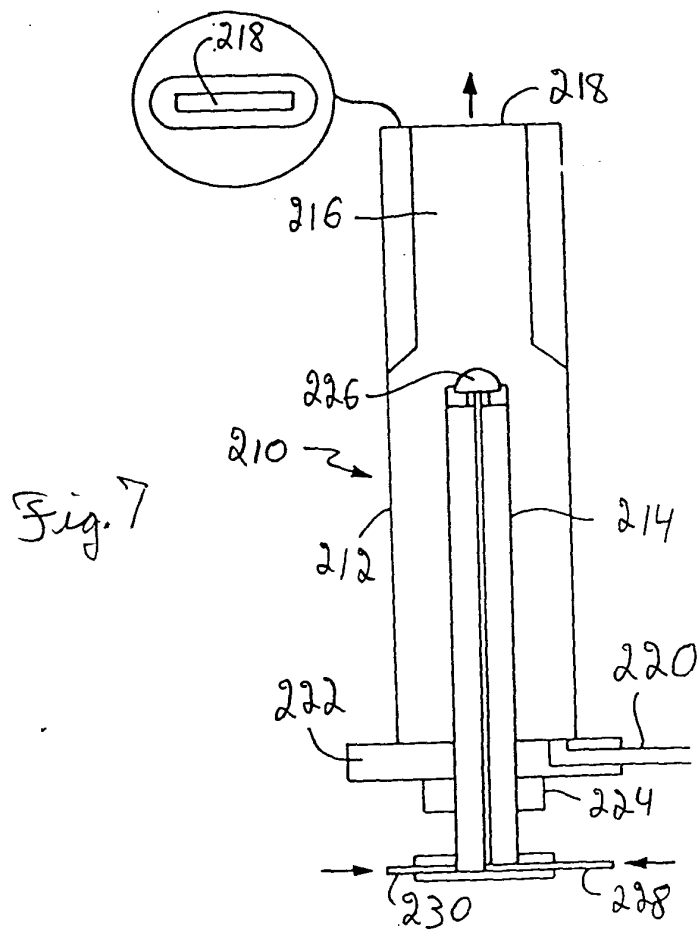
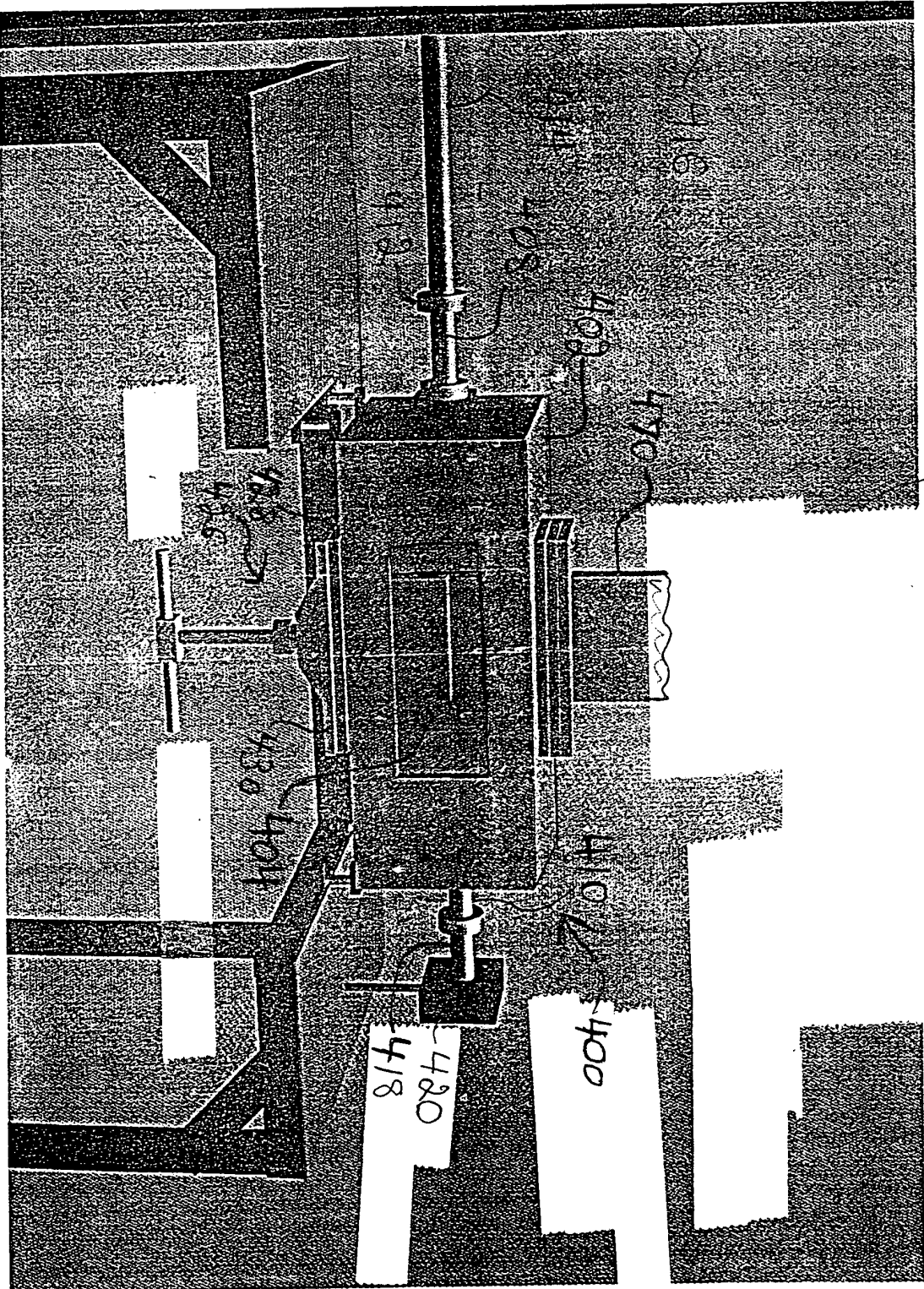
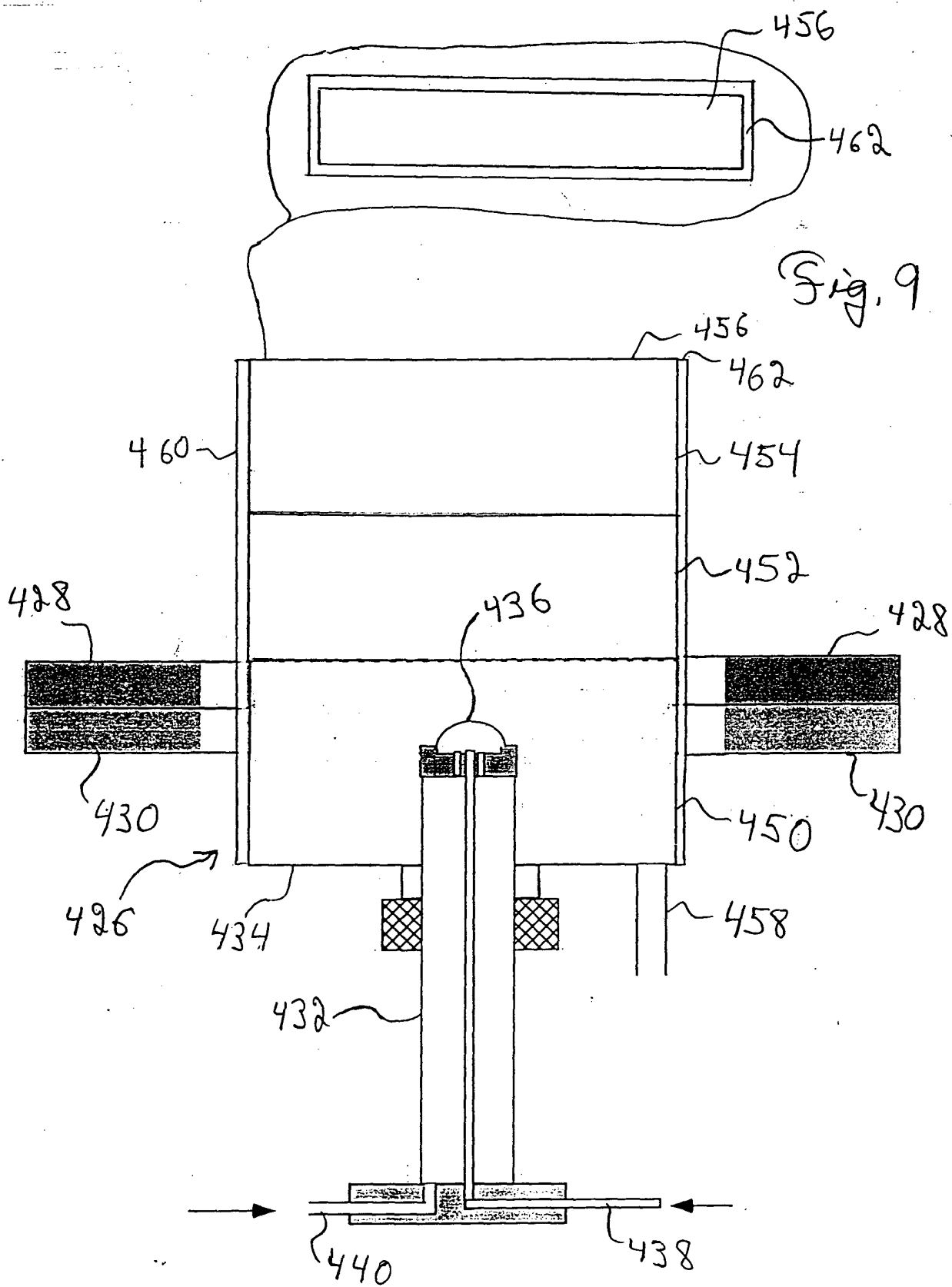


Fig. 7

Fig. 8



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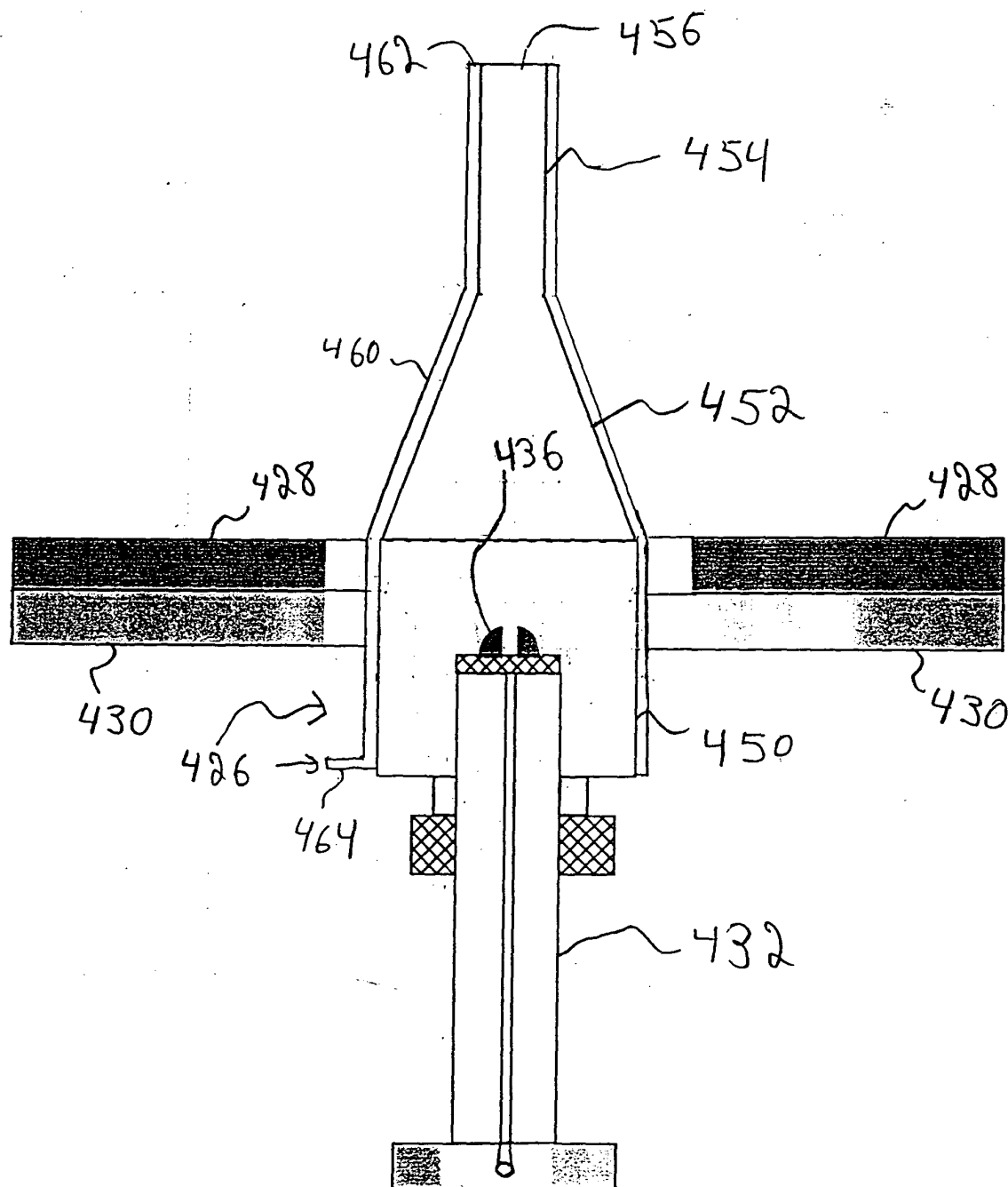
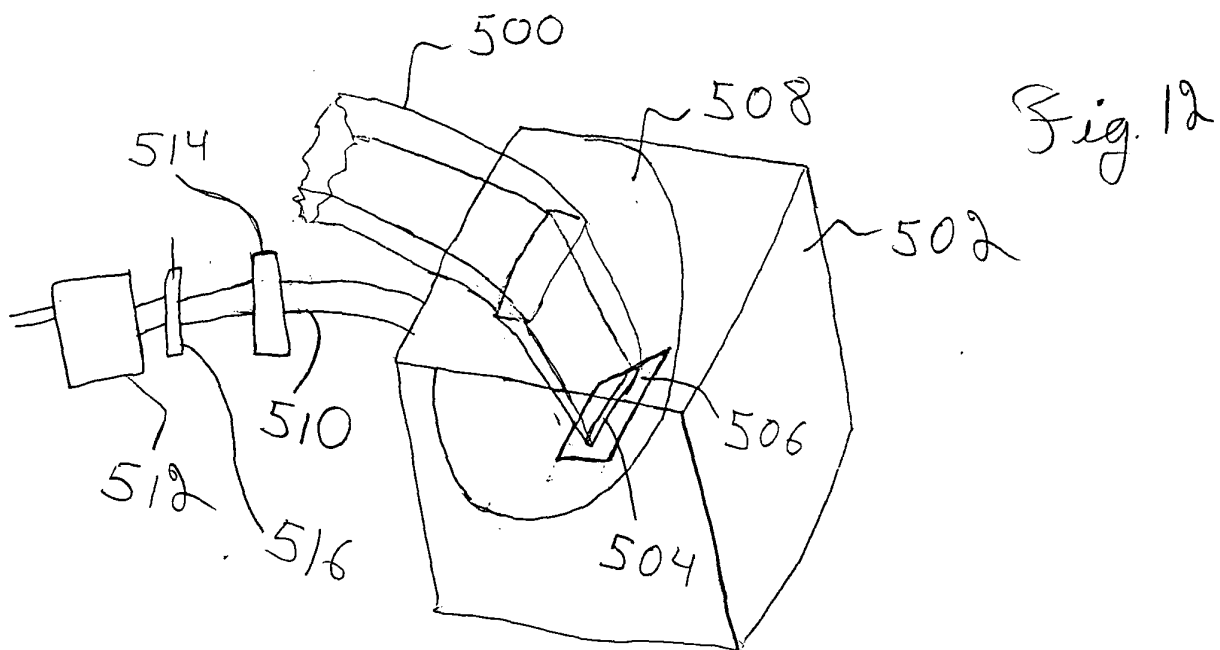
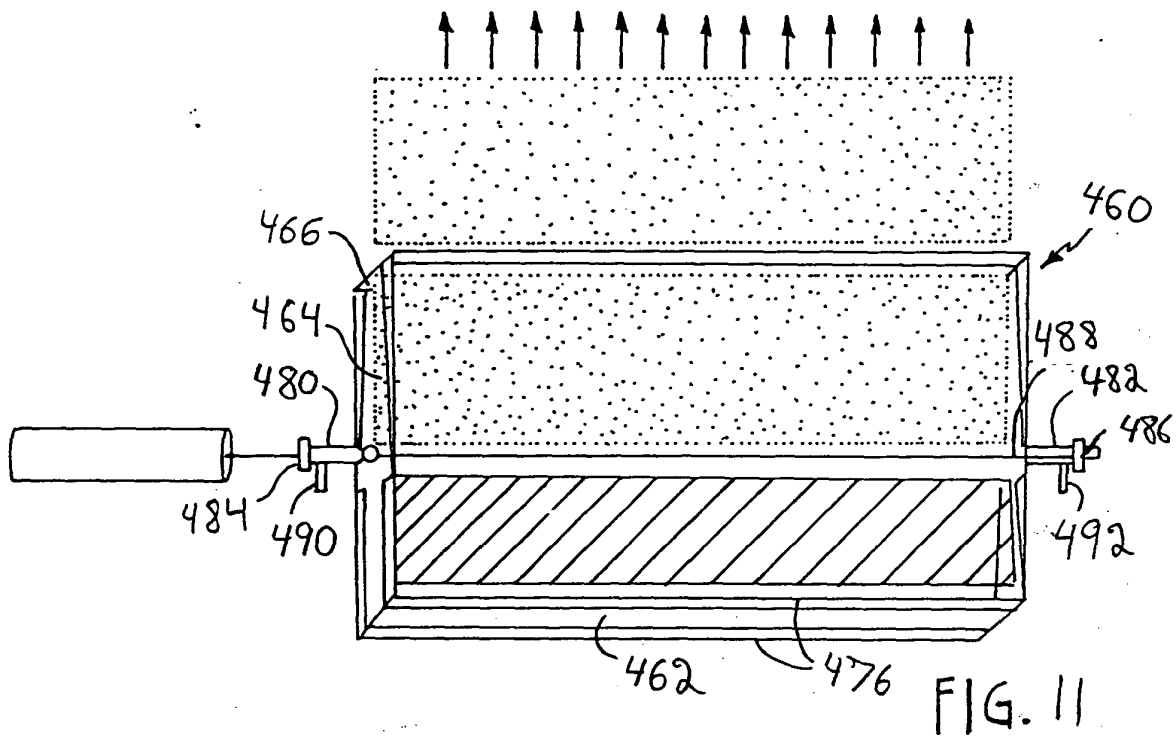
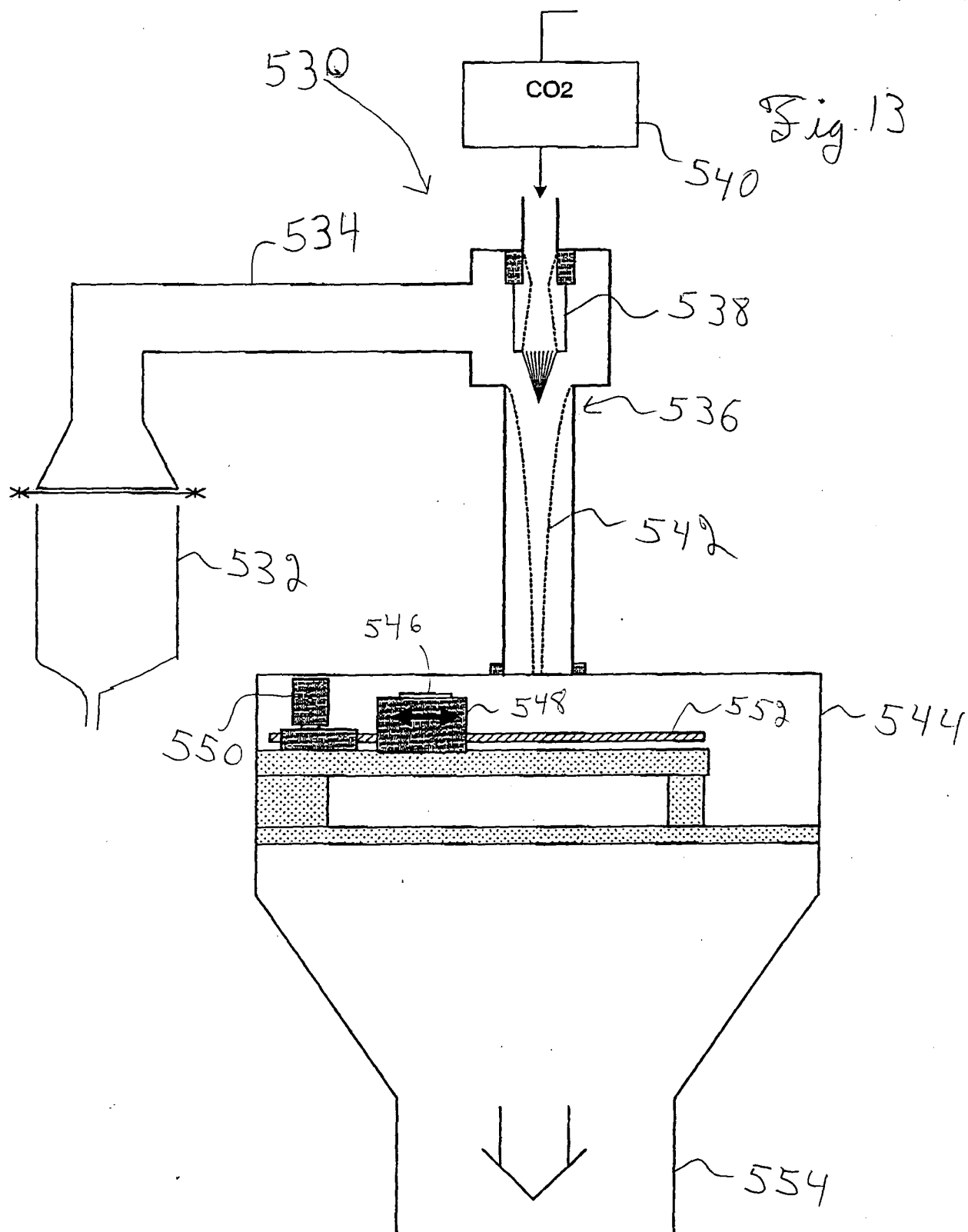


Fig. 10





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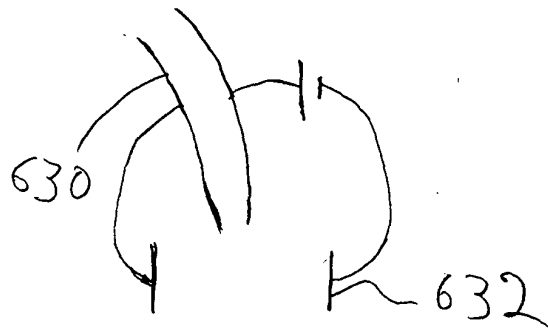
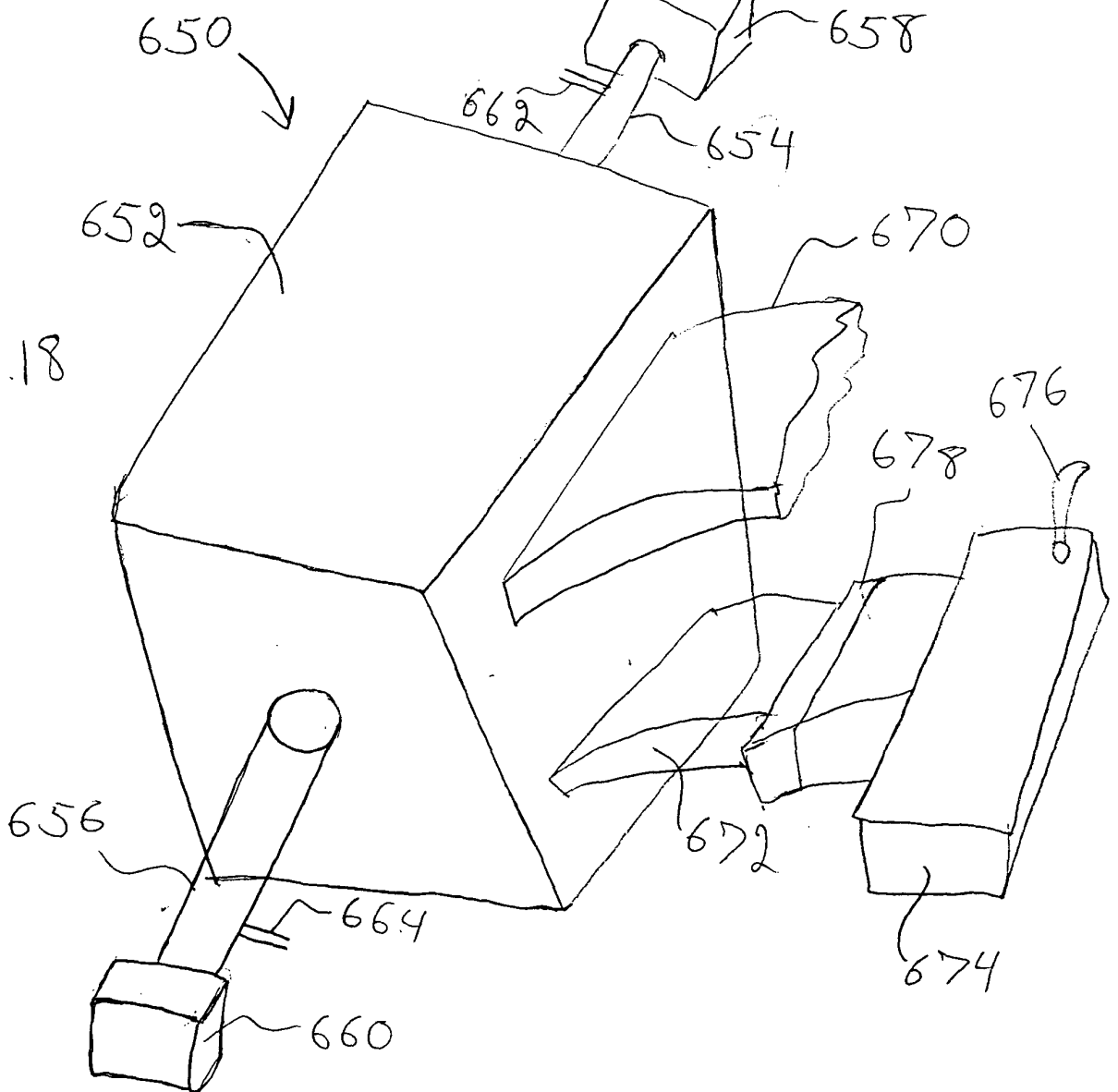


Fig. 17



Fig. 18



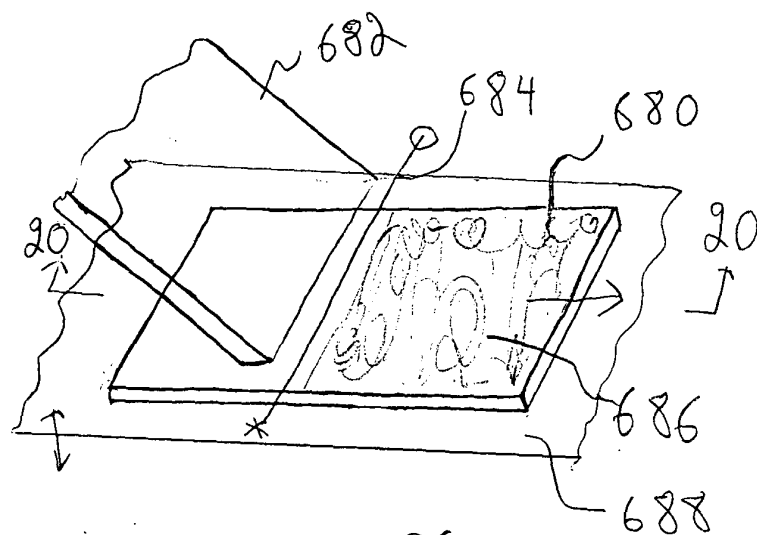


Fig. 19

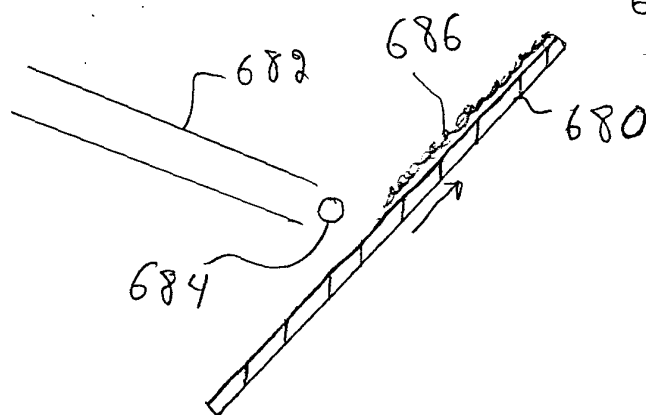


Fig. 20

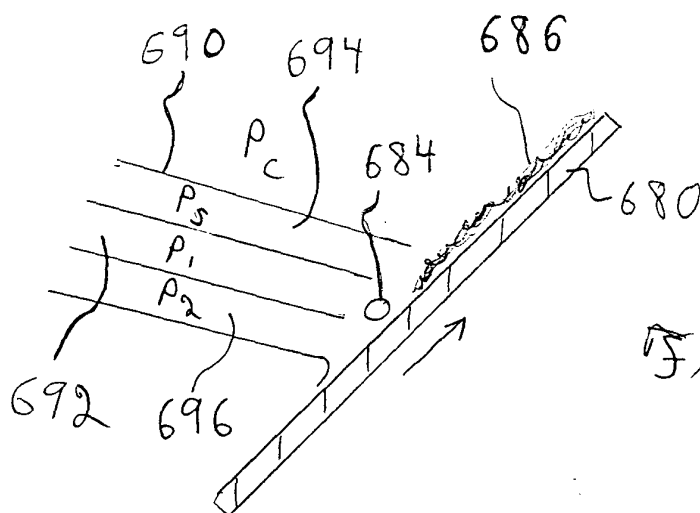
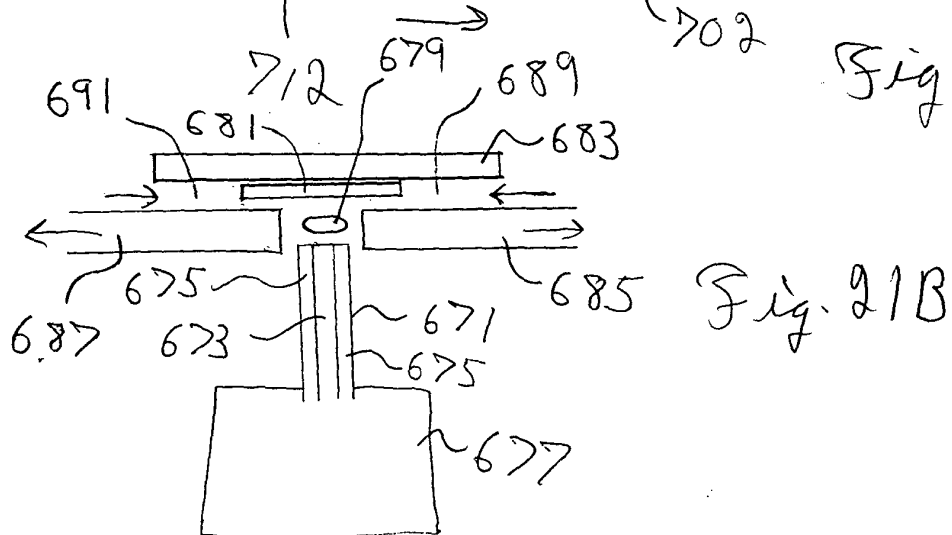
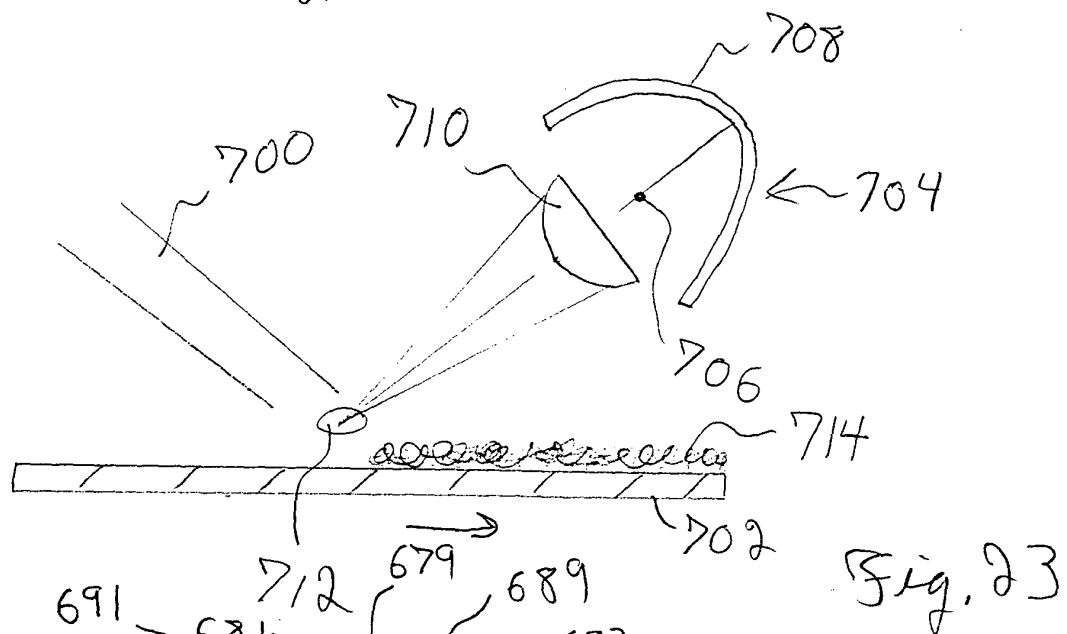
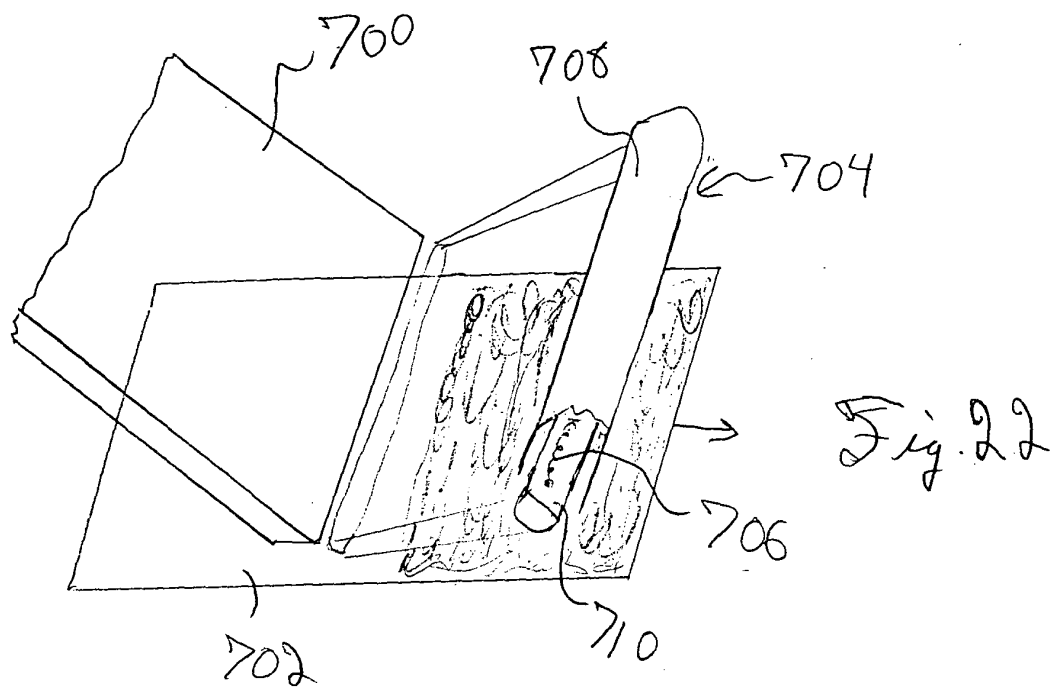


Fig. 21A



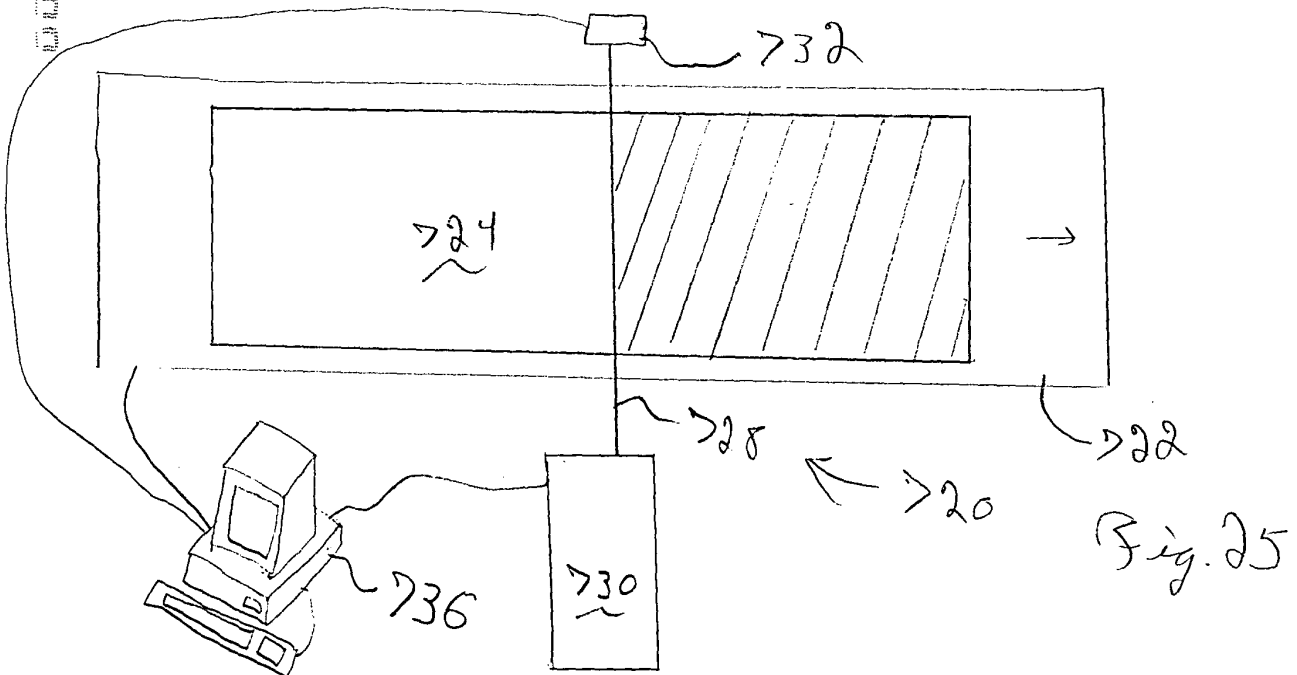
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Fig. 25

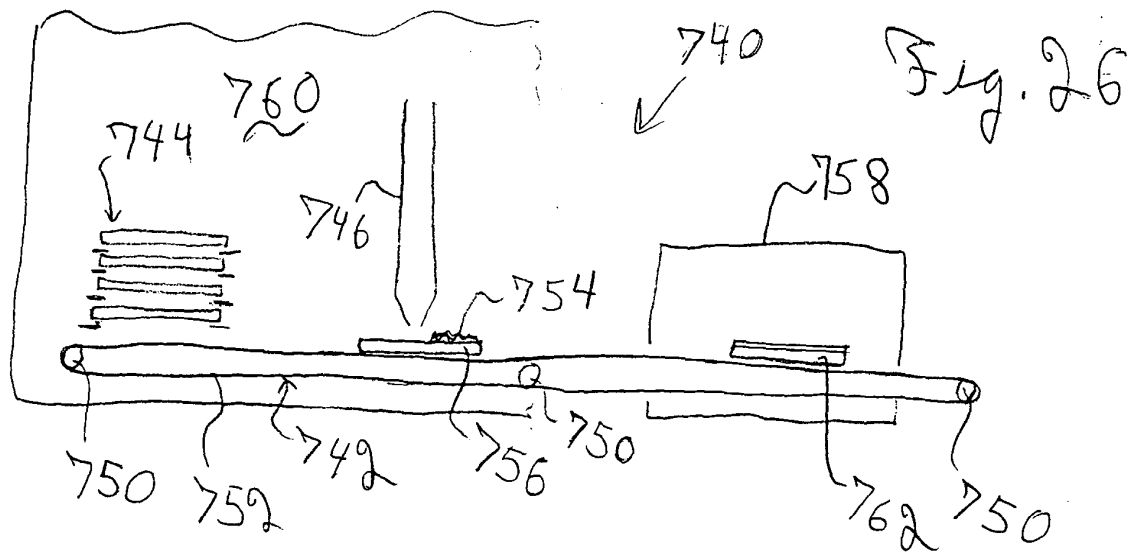


Fig. 29

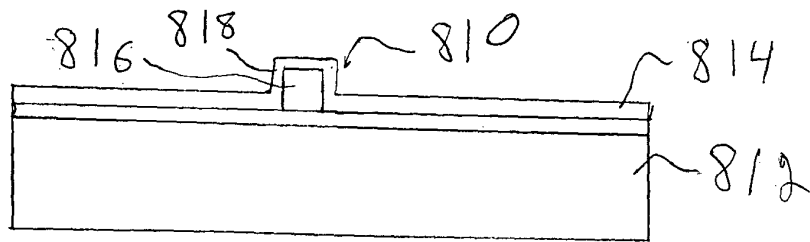
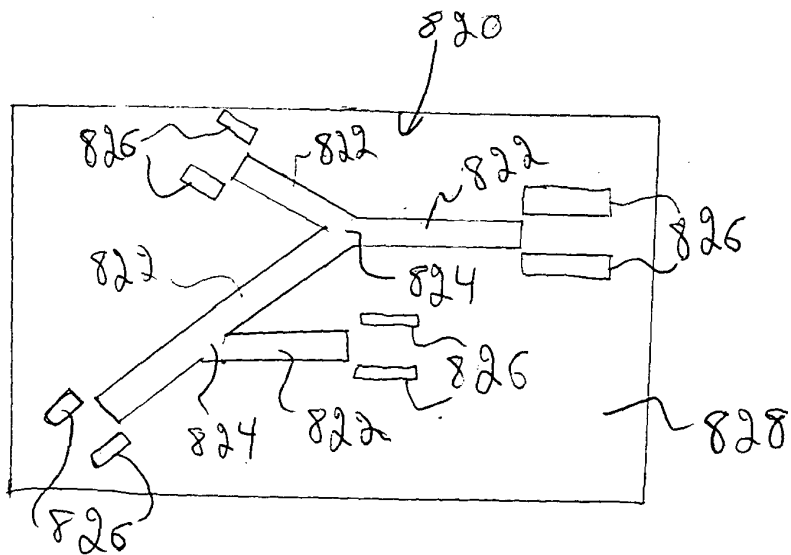
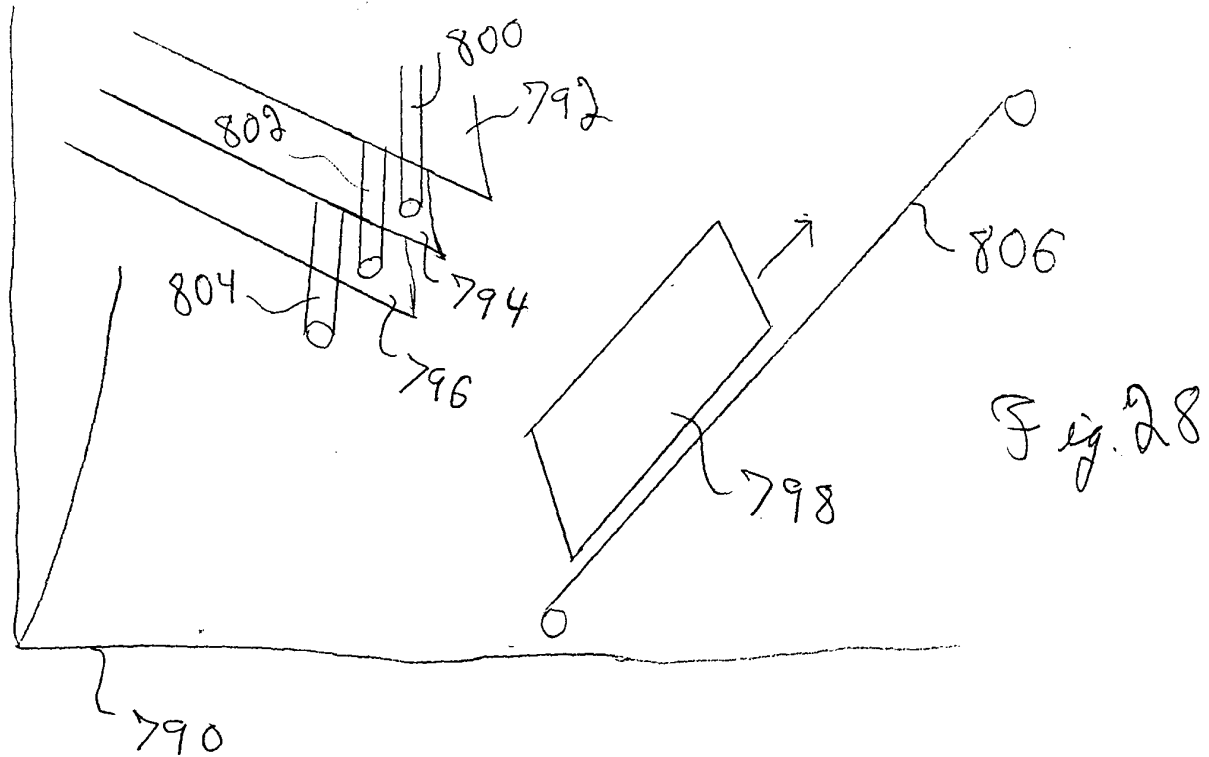
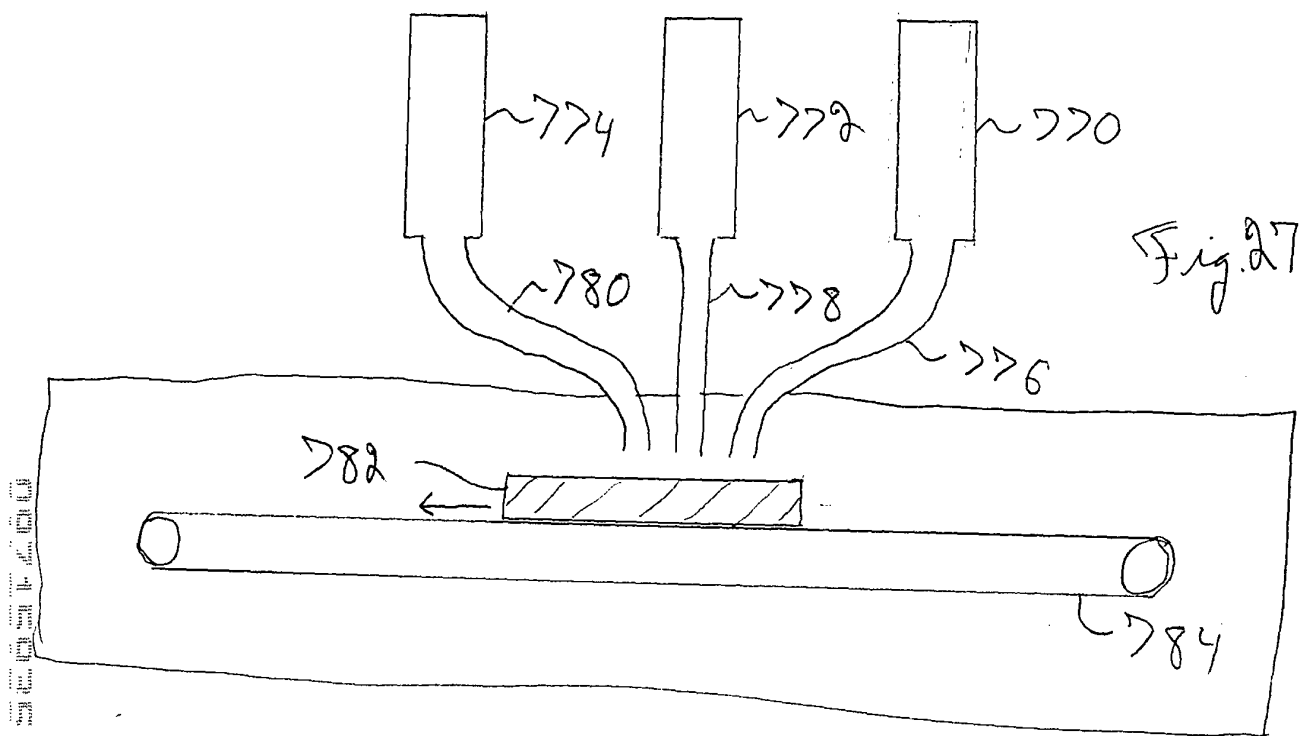


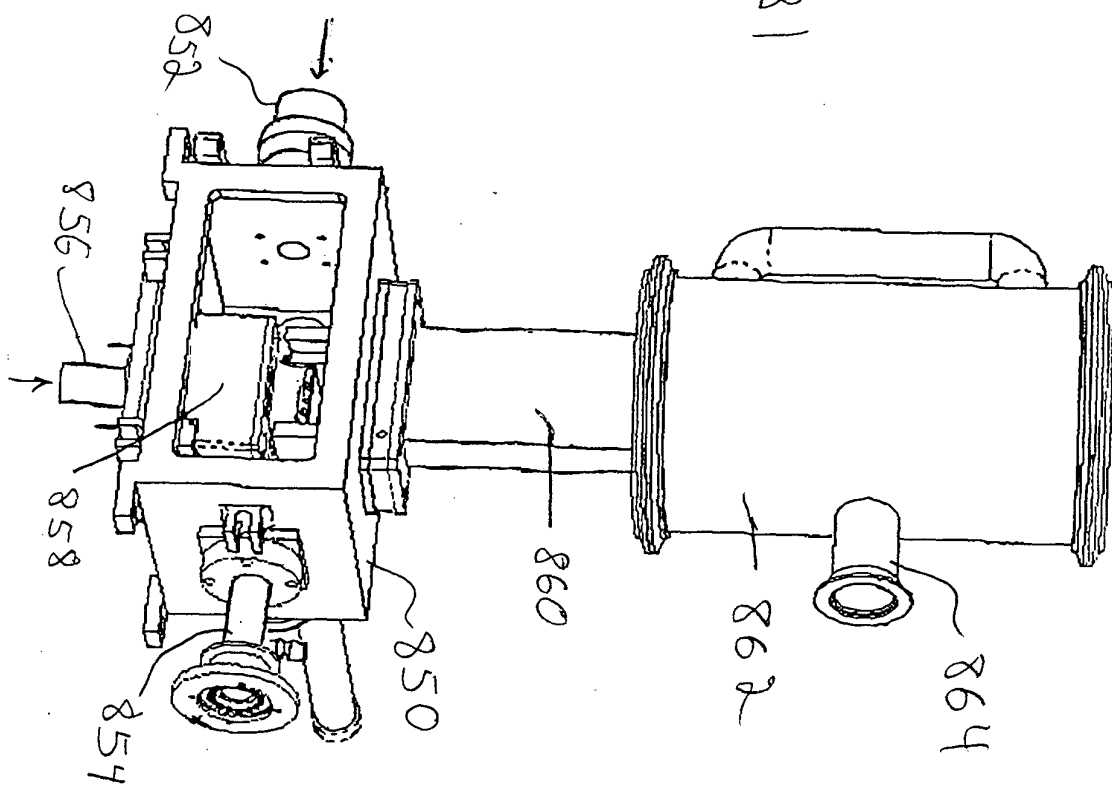
Fig. 30

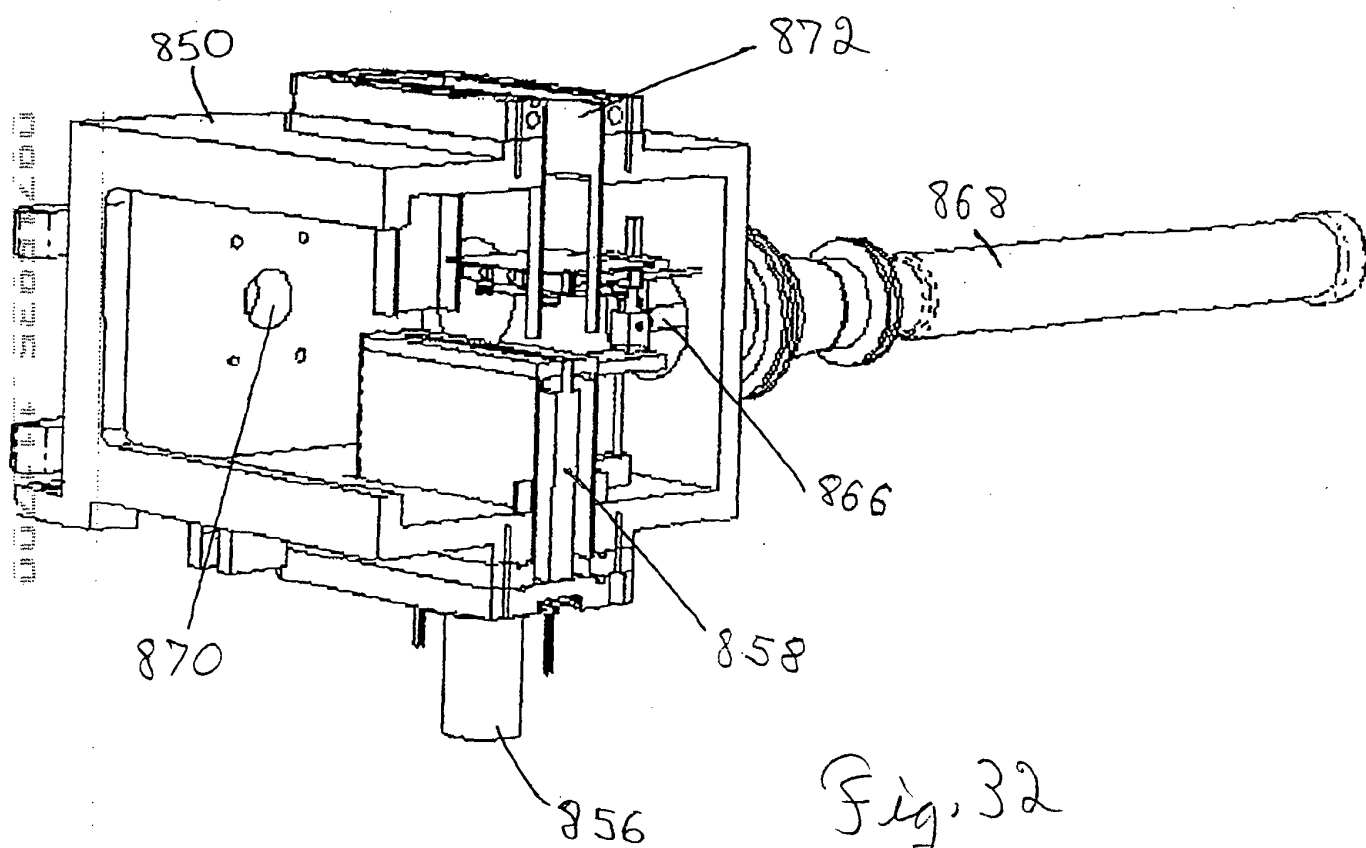






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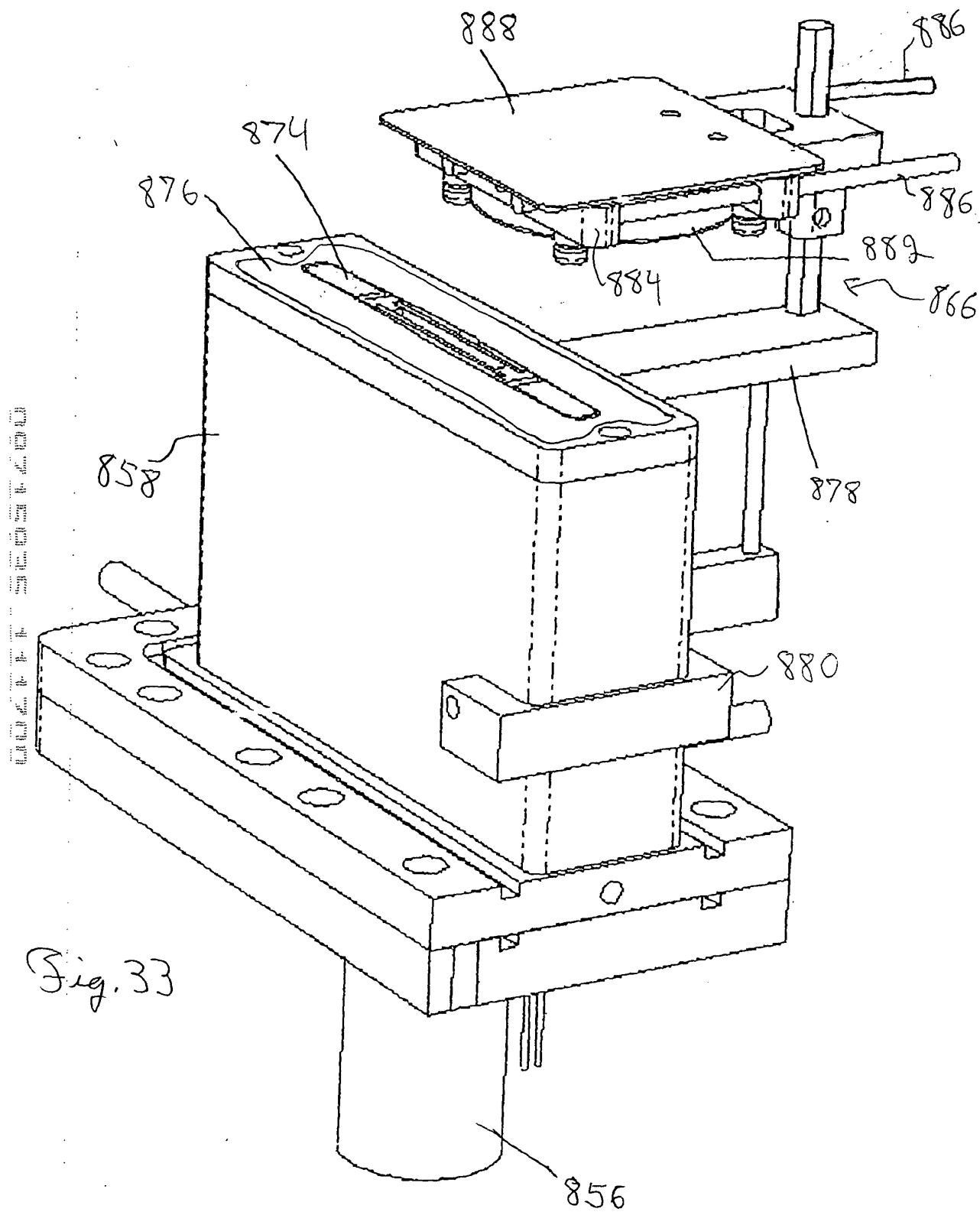


Fig. 33

Fig. 34

